



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,041	03/29/2004	Frank M. Fago	MRD / 116	1450
26875	7590	10/18/2007	EXAMINER	
WOOD, HERRON & EVANS, LLP			CARPENTER, WILLIAM R	
2700 CAREW TOWER			ART UNIT	PAPER NUMBER
441 VINE STREET			4111	
CINCINNATI, OH 45202			MAIL DATE	DELIVERY MODE
			10/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/812,041	FAGO, FRANK M.
	Examiner William Carpenter	Art Unit 4111

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11 August 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-34 is/are pending in the application.
 - 4a) Of the above claim(s) 26-34 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5, 13-15, 19-21, 24 and 25 is/are rejected.
- 7) Claim(s) 1, 6-12, 16-18, 23 and 24 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 29 March 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date <u>8/11/2006; 07/13/2004</u> .	6) <input type="checkbox"/> Other: _____

DETAILED ACTION***Election/Restrictions***

1. I. Claims 1-25, drawn to a product for maintaining a fluid in suspension, classified in class 604, subclass 125.
- II. Claims 26-31, drawn to a process for administering a contrast agent to a patient, classified in class 604, subclass 500.
- III. Claims 32-34, drawn to a process for aspirating an apparatus, classified in class 604, subclass 35.

The inventions are distinct, each from the other because of the following reasons.

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case the product of Group I could be used in a materially different process than that of Group II. For example, the "suspension apparatus" of Group I could be used only as a storage container for a suspension, rather than administer the suspension to a patient.

3. Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In

the instant case the product of Group I could be used in a manner materially different from the process of Group III. For example, aspirating a fluid from a single container, with a quantity of the suspendible agent itself acting as the propellant could fill the "suspension apparatus" of Group I.

4. Inventions II and III are directed to related processes of administering a contrast agent and filling an apparatus. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, as evidenced by Group II being directed towards emptying a device and Group III being drawn to filling a device, the inventions as claimed have a materially different mode of operation. For instance, the device used in the process of Group II could be as part of an infusion pump, which would preclude the need to fill the reservoir through a process of aspiration as positively required in the process of Group III.

5. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Mr. William Allen on 08/02/2007 a provisional election was made without traverse to prosecute the invention of Group 1, Claims 1-25. Affirmation of this election must be made by applicant in

Art Unit: 4111

replying to this Office action. Claims 26-34 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Figure 9 does not contain the reference sign for Item 26 as is referenced on Page 17 of Applicant's specification. While this feature does contain a reference symbol in previous figures, it is mentioned specifically in the context of Figure 9, as part of an alternate embodiment. Therefore, the reference symbol for Item 26 is required in Figure 9. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

8. Claim 1 is objected to because of the following informalities: In line 10 of Claim 1 the phrase "the contrast agent" is used. However, this phrase is improper, as no contrast agent has been previously introduced. It is suggest that the article "the" of "the contrast agent" should be changed to "a" as in "a contrast agent".

9. Claim 11 is objected to because of the following informalities: Claim 11, Line 3 makes reference to "said upstream surface". However, in this case the use of the article "said" is not proper, as an upstream surface has not been previously introduced in Claims 1, 2, or 4. It is suggested that the article "said" be changed to "an", as in "an upstream surface".

10. Claim 24 is objected to because of the following informalities: Claim 24 makes reference to "said plurality of baffle plates" as well as a "said plurality of spacer plates". However, the use of this language is not proper, as Claim 21, on which Claim 24 is dependent, does not disclose any baffle or spacer plates. It is suggested that the article "said" be changed to "a" as in "a plurality of spacer plates" or "a plurality of baffle plates".

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 4111

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claim 1-5,13-15, 19, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,354,729 ("Brown").

As regards to Claim 1, Brown teaches an apparatus for administering a suspendible agent in suspension (Column 3, Lines 12-21). While Brown does not disclose this device to be used in conjunction with either a propellant fluid or contrast agent, Brown is adequately suited to handle fluid mixtures in virtually any area, including chemical, food, healthcare, medical, petrochemical, and polymer applications (Column 9, Lines 54-57). Given this broad industrial application, it is believed that the device of Brown is suited for mixing a propellant fluid and a contrast agent within the context of the medical and healthcare industries. Brown does not need to mention the use of his device in conjunction with either a contrast agent or propellant fluid, as this is only an intended use of the device of Claim 1, with the positive limitation only being the capability to accommodate these fluids.

Brown teaches a delivery container comprising an external compartment (Figure 1, Item 3) in combination with a delivery mechanism (Figure 1, Items 2, 1, 4, and 10 in combination; Column 4, Lines 5-17) for causing a fluid to flow through the fluid path. This delivery container has an exit port (Figure 1, Item 14) and forms a fluid path between the delivery mechanism and the exit port. This interpretation of the delivery container is believed to be consistent with Applicant's description of a delivery container as noted in Page 16, Line 24 – Page 17, Line

2 of Applicant's specification and referenced by Figure 9 of Applicant's accompanying drawings. Applicant states "the delivery container 12 further includes an external compartment 90 coupled in fluid communication with the exit port and the suspension apparatus 10 is positioned inside of the external compartment 90" [formatting altered for emphasis]. Based on the language used it is believed that the delivery container is formed by a combination of the syringe barrel (Item 12) and the external compartment (Figure 9, Item 90). Given this interpretation the exit port as referenced in Claim 1 is believed to refer to exit port (Figure 9, Item 98) as supported by Page 17, Line 10 of Applicant's specification.

Brown further teaches a suspension apparatus disposed within the fluid path (Figure 1, Items 1 and 4 in combination) including a radial flow channel (Figure 1, Items 8) and a plurality of circumferential flow channels (Figure 2, Items 11) coupled in fluid communication by the radial flow channels. While not explicitly stated by Brown, one would have reasonably expected and appreciated that the device of Brown would have to include some means for introducing a fluid to the mixing/suspension apparatus housed in the external compartment. In other words, a fluid reservoir within a container must be provided upstream from the external compartment in order to maintain a continuous supply of fluid for mixing.

As regards to Claim 2, Brown teaches a plurality of circumferential dividing walls to define the circumferential channels (Figure 2, Item 7).

As regards to Claim 3, Brown teaches gaps within the circumferential dividing walls that defines radial flow channels (Figure 2, Item 8).

As regards to Claim 4, Brown teaches a device that uses a fist plate (Figure 1, Item 1), which carries a plurality of circumferential dividing walls (Figure 1, Item 4).

As regards to Claim 5, Brown teaches radial dividing walls in the form of vanes (Figure 2, Item 10) which intersect the circumferential dividing walls in order to block the circumferential flow channels and divert fluid flow through the radial flow channels (Column 3, Lines 63-67).

As regards to Claim 13, Brown teaches a device that uses two plates, a rotor and a stator (Figure 1, Items 1 and 4). The stator, as disclosed by Brown, reads on the claimed second plate. Brown's stator contains two axial flow channels for allowing fluid communication with the circumferential flow channels (Figure 1, Items 13 and 31). In this case, the contact between the first and second plates defines the plurality of circumferential dividing walls (Figure 2, Item 11).

As regards to Claim 15, Brown discloses an alternate embodiment (not pictured) that mounts the rotor and stator such that the circumferential dividing walls are concentrically configured (Column 8, Lines 11-18).

As regards to Claim 19, based on the above interpretation of the delivery container to include the external compartment (Figure 1, Item 3) Brown teaches the suspension apparatus (Figure 1, Items 1 and 4 in combination) are disposed within the delivery container.

As regards to Claim 20, Brown discloses an alternate embodiment (not pictured) that mounts the rotor and stator such that the circumferential dividing walls are concentrically configured (Column 8, Lines 11-18).

13. Claims 1, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,368,382 ("Kawasaki et al.").

As regards to Claim 1, Kawasaki et al. teaches an apparatus for administering a suspendible agent in suspension (Column 1, Lines 9-13). Kawasaki et al. teaches a delivery container comprising a delivery mechanism in the form of a cement pump (Column 3, Lines 29-31) in combination with an external compartment (Figure 4, Item 4) having an exit port (Figure 4, The end of external compartment 4 nearest the bottom of the page). This interpretation of the delivery container is believed to be consistent with Applicant' description of a delivery container as noted in Page 16, Line 24 – Page 17, Line 2 of Applicant's specification and referenced by Figure 9 of Applicant's accompanying drawings. Applicant states "the delivery container 12 further includes an external compartment 90 coupled in fluid communication with the exit port and the suspension apparatus 10 is positioned inside of the external compartment 90" [formatting altered for emphasis]. Based on the language used it is believed that the delivery container is formed by a combination of the syringe barrel (Item 12) and the external compartment (Figure 9, Item 90). Given this interpretation the exit port as referenced in Claim 1 is believed to refer to exit port (Figure 9, Item 98) as supported by Page 17, Line 10 of Applicant's specification.

Kawasaki et al. further teaches a suspension apparatus disposed within the fluid path (Figure 4, Items 1) including a radial flow channel (Figure 3, Items 3, Further defined by the arrows representing fluid flow) and a plurality of circumferential flow channels (Figure 3, Items 2, Further defined by the arrows representing fluid flow) coupled in fluid communication by the radial flow channels (Figure 3, As shown by the arrows representing fluid flow).

While not explicitly stated by Kawasaki et al., one would have reasonably expected and appreciated that the device of Kawasaki et al. would have to include some means for introducing a fluid to the mixing/suspension apparatus housed in the external compartment. In other words, a fluid reservoir within a container must be provided upstream from the external compartment in order to maintain a continuous supply of fluid for mixing.

Finally, while Kawasaki et al. does not disclose this device to be used in conjunction with either a propellant fluid or contrast agent, Kawasaki et al. is designed to handle a fluid in suspension (in the instant case cement). However, the difference in fluid viscosity does not preclude the device of Kawasaki et al. from accommodating a saline propellant fluid or a contrast agent. Kawasaki et al. does not need to mention the use of his device in conjunction with either a contrast agent or propellant fluid, as this is only an intended use of the device of Claim 1, with the positive limitation only being the capability to accommodate these fluids.

As regards to Claim 16, Kawasaki et al. teaches a pair of identical first plates (Figure 2, Items 1) having a plurality of circumferential flow channels

(Figure 2, Items 2) and plurality of radial flow channels (Figure 2, Items 3) distributed between them.

As regards to Claim 17, Kawasaki et al. teaches a second plate (Figure 3, Item 1) positioned between a pair of first plates (Figure 3, Items 1, The plate nearest the bottom of the page and the third plate from the bottom of the page) separating the circumferential and radial flow channels on the upstream side of one first plate (Figure 3, Item 1, The plate nearest the bottom of the page) from the circumferential and radial flow channels on the downstream side of the other first plate (Figure 3, Item 1, The third plate from the bottom of the page). As the language of the claim does not require the first and second plates to have different configurations, the teachings of Kawasaki et al. read on Claim 17.

14. Claims 21 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,767,415 ("Duffy").

As regards to Claim 21, Duffy teaches a delivery container (Figure 1, Items 2 and 12 in combination) including a fluid reservoir (Figure 1, Item 5) capable of holding a propellant fluid (Column 5, Lines 62-66). This delivery container has an exit port (Figure 3, Item 9), a fluid path formed between the reservoir and exit port, and delivery mechanism (Figure 1, Item 6). This interpretation of the delivery container is believed to be consistent with Applicant's description of a delivery container as noted in Page 16, Line 24 – Page 17, Line 2 of Applicant's specification and referenced by Figure 9 of Applicant's accompanying drawings. Applicant states "the delivery container 12 further includes an external compartment 90 coupled in fluid communication with the

exit port and the suspension apparatus 10 is positioned inside of the external compartment 90" [formatting altered for emphasis]. Based on the language used it is believed that the delivery container is formed by a combination of the syringe barrel (Item 12) and the external compartment (Figure 9, Item 90). Given this interpretation the exit port as referenced in Claim 1 is believed to refer to exit port (Figure 9, Item 98) as supported by Page 17, Line 10 of Applicant's specification.

Duffy also teaches a suspension apparatus disposed in the fluid path including a plurality of first (Figure 3, Items 11) and second plates (Figure 3, Items 10) in a stacked arrangement divided by a plurality of dividing walls (Figure 3, Items 10 and 12 in combination) defining a plurality of circumferential flow channels (Figure 3, Items 15). The circumferential flow channels, by virtue of their helical structure, permit axial flow from one plate (Figure 3, Items 11) and circumferential flow channel (Figure 3, Items 15) to the next. The claim language does not require separate and distinct axial flow channels, rather only a configuration that "permits axial flow". As such the claim reads on the teachings of Duffy. Duffy further satisfies the intended use of "administering a suspendible contrast agent in suspension" by teaching the device in combination with an injectable radionuclide, which is used in the art as a contrast agent for medical imaging.

As regards to Claim 25, Duffy teaches in an alternate embodiment positioning a suspension device inside the delivery container itself (Figure 10).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 4111

16. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,354,729 ("Brown") in view of US Patent No. 6,837,397 ("Lassota").

Claim 1 is alternately rejected under 103(a) should Examiner's argument of inherency regarding a delivery container having an upstream reservoir, as set forth in Paragraph 12, is not found to be persuasive. While Brown does not explicitly state the presence of an upstream reservoir, the use of a container housing a reservoir located upstream from a mixing/suspension apparatus is well known in the art of mixing a suspendible fluid as demonstrated in Lassota (Figure 3). Lassota teaches a mixing apparatus (Figure 3, Item 35) contained within an external compartment (Figure 3, Item 34) designed to deliver a suspendible fluid in suspension (Column 1, Lines 13-17). Lassota teaches this device to have a reservoir (Figure 3, Item 14) upstream from the mixing means for continuously supplying a fluid. In the instant case the device of Lassota is associated with delivering a mixed beverage, which is within the industrial scope of the device of Brown. It would have been obvious to one having ordinary skill in the art to include a reservoir upstream from the external compartment, as taught by Lassota, as to continuously supply the mixing/suspension device of Brown with fluid for mixing.

17. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,368,382 ("Kawasaki et al.") in view of US Patent No. 2,957,430 ("Naef").

Claim 1 is alternately rejected under 103(a) should Examiner's argument of inherency regarding a delivery container having an upstream reservoir, as set

forth in Paragraph 13, is not found to be persuasive. While Kawasaki et al. does not explicitly state the presence of pumping mechanism including a reservoir upstream from the mixing/suspension apparatus, the use of such devices are well known in the art of mixing a suspendible fluid as demonstrated in Naef. Naef teaches a cement pump unit (Figure 1) that would be suitable for use with the device of Kawasaki et al. Naef teaches this pump to include a reservoir in the form of a hopper (Figure 1, Item 22) as to continuously provide the pump with a mix supply (Column). Naef further teaches a delivery mechanism in the form of a piston (Figure 3, Item 11) to advance the cement flow towards the delivery conduit (Figure 1, Item 29). It would have been obvious to one having ordinary skill in the art to utilize the pumping means including a fluid reservoir, as taught by Naef, in order to provide the suspension/mixing apparatus of Kawasaki et al. with a continuous supply of fluid for mixing.

Allowable Subject Matter

18. Claims 6-12, 14, 18, 19, and 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As regards to Claim 6-7, the limitation of "a plate having opposed upstream and downstream surfaces" was not taught in the prior art of Brown. These surfaces were however taught in the prior art reference Kawasaki et al. However, Kawasaki et al. does not teach a "plurality of circumferential dividing walls defining said plurality of flow channels" as required in Claim 2. Furthermore,

Art Unit: 4111

no motivation to combine the elements of Kawasaki et al. and the elements of Brown could be found. Therefore Claims 6-7 contain allowable subject matter.

As regards to Claims 8-10, the limitation of "opposed upstream and downstream surfaces" was not taught in the prior art of Brown. While these surfaces were taught in Kawasaki et al., the reference fails to teach a "plurality of circumferential dividing walls defining said plurality of flow channels" as required in Claim 2. Furthermore no motivation to combine the elements of Kawasaki et al. and Brown could be found. Therefore Claims 8-10 contain allowable subject matter.

As regards to Claims 11 and 12, Brown fails to teach the limitations of a third plate as well as upstream surfaces. While Kawasaki et al. does teach a third plate as well as upstream surface, Kawasaki et al. fails to teach a "plurality of circumferential dividing walls defining said plurality of flow channels" as required in Claim 2. Furthermore, no motivation to combine the elements of Kawasaki et al. and Brown could be found in the prior art. Therefore Claims 11-12 contain allowable subject matter.

As regards to Claim 14, Brown fails to teach any irregularities included with the dividing walls to cause the direction of fluid flow to change, and no motivation to combine this feature could be found in the art. Therefore Claim 14 contains allowable subject matter.

As regards to Claim 18, while Kawasaki et al. teaches axial flow channels, these channels are not taught as to directly couple the pair of first plates. No

Art Unit: 4111

teaching of this limitation could be found in the prior art nor could any motivation to combine elements. Therefore Claim 18 contains allowable subject matter.

As regards to Claim 19, the limitation that the "suspension device is positioned inside said delivery container" was not taught in Brown or Kawasaki et al. While Duffy does teach the suspension apparatus to be positioned inside the delivery container Duffy lacks radial flow channels as required in Claim 1. No motivation to combine the elements of Duffy with the device of Brown or Kawasaki et al. could be found in the prior art. Therefore Claim 19 is allowable.

As regards to Claim 22, Duffy fails to teach the limitation that the ratio between the volume of the flow channels and the volume of the area occupied by the dividing walls ranges from .25-.5. This limitation could not be found in the art; therefore Claim 22 contains allowable subject matter.

As regards to Claim 23, Duffy fails to teach the limitation of a plurality of radial flow channels. While this limitation has been taught in prior art of Kawasaki et al. as well as Brown, these references fail to teach limitations of the independent Claim 21. Kawasaki et al. fails to teach a plurality of dividing walls defining a plurality of circumferential flow channels and Brown fails to teach a plurality of first and second plates with a stacked arrangement. No motivation to combine these references could be found. Therefore Claim 23 contains allowable subject matter.

As regards to Claim 24, while Duffy does teach space plates (Figure 3, item 10) the reference does not teach a plate that could be interpreted as a "baffle plate". While Kawasaki et al. teaches plates that are considered "baffle

plates" the reference fails to teach the entirety of patentable subject matter in Claim 21. No motivation to combine these references could be found. Therefore Claim 24 contains allowable subject matter.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Carpenter whose telephone number is (571) 270-3637. The examiner can normally be reached on Monday through Thursday from 7:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sam Yao can be reached on 571-272-1224. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WC
09/12/2007



SAMCHUAN C. YAO
SUPERVISORY PATENT EXAMINER